

WHAT IS CLAIMED IS:

1. A method for producing a dairy-based confection comprising:
 - a) heating an aqueous sugar composition to at least its boiling point to obtain a boiling sugar composition,
 - b) admixing a protein-containing dairy component with the boiling sugar composition to obtain a dairy-based mass,
 - c) heating the dairy-based mass above its initial boiling point, cooking the dairy-based mass and obtaining a cooked dairy-based mass,
 - d) increasing the solids content of the cooked dairy-based mass, and
 - e) cooling the cooked dairy-based mass to obtain a dairy-based confection.
2. A method as claimed in claim 1 wherein said dairy component contains water, the dairy component is injected into said boiling sugar composition, and vaporization of the water by steam from said boiling sugar composition admixes the dairy component with the boiling sugar composition.
3. A method as claimed in claim 1 wherein the dairy-based mass is flashed to remove moisture and increase the solids content of the dairy-based mass prior to said cooking.
4. A method as claimed in claim 1 wherein the aqueous sugar composition is heated in a counter-current heat exchanger and the dairy-based mass is cooked in a

counter-current heat exchanger.

5. A method as claimed in claim 4 wherein the counter-current heat exchanger is a plate and frame heat exchanger.

6. A method as claimed in claim 1 wherein the dairy-based mass is heated in a plate and frame heat exchanger to a vigorous, agitated boil so as to prevent substantial precipitation of protein and fouling of the heat exchanger surfaces.

7. A method as claimed in claim 1 wherein the solids content of the cooked dairy-based mass is increased by flashing.

8. A method as claimed in claim 1 wherein the solids content of the cooked dairy-based mass is increased by the application of vacuum.

9. A method as claimed in claim 1 wherein the solids content of the cooked dairy-based mass is increased to obtain a dairy-based confection with a chewy texture.

10. A method as claimed in claim 1 wherein gelatin is admixed with the cooked dairy-based mass before increasing the solids content of the cooked dairy-based mass.

11. A method as claimed in claim 1 wherein the cooked dairy-based mass is subjected to pulling during cooling.

12. A method as claimed in claim 1 wherein the amount of said dairy component is from about 3% by weight to about 30% by weight, based upon the total weight of the dairy component and aqueous sugar composition.

13. A method as claimed in claim 1 wherein the protein content of the dairy-based confection is from about 0.4% by weight to about 5% by weight, based upon the weight of the dairy-based confection.

14. A method as claimed in claim 1 wherein said dairy component comprises at least one member selected from the group consisting of milk, cream, sweetened condensed skim milk, sweetened condensed whole milk, condensed milk, anhydrous milk fat, milk solids, whey, butter, yogurt, casein, caseinate salts, protein containing dairy substitutes and cocoa.

15. A method as claimed in claim 1 wherein said aqueous sugar composition is heated to a temperature of from about 225°F to about 295°F.

16. A method as claimed in claim 15 wherein said dairy component is injected at a temperature of from about 36°F to about 60°F.

17. A method as claimed in claim 1 wherein said dairy-based mass is heated to a temperature of from about 245°F to about 295°F.

18. A method as claimed in claim 1 wherein said aqueous sugar composition comprises a mixture of sucrose with at least one syrup selected from the group consisting of corn syrup and wheat syrup.

19. A method as claimed in claim 1 wherein said aqueous sugar composition is heated at a pressure of from about atmospheric pressure to about 25 psig.

20. A method as claimed in claim 1 wherein said dairy-based mass is heated at a pressure of about atmospheric pressure to about 25 psig.

21. A method as claimed in claim 3 wherein the dairy-based mass is flashed at a pressure of about atmospheric pressure.

22. A method as claimed in claim 21 wherein the solids content of the cooked dairy-based mass is increased at a pressure of about atmospheric to about 28 in. Hg vacuum.

23. A method for the continuous production of a dairy-based confection comprising heating an aqueous sugar composition to at least its boiling point in a first plate and frame heat exchanger, admixing a dairy component with the boiling, aqueous sugar composition after it exits the first plate and frame heat exchanger to form a dairy-based mass, heating the dairy-based mass in a second plate and frame heat exchanger to a final temperature to achieve a desired solids content after vapor separation, and cooking said dairy-based mass in said second plate and frame heat exchanger without substantial separation or precipitation of the protein within the second plate and frame heat exchanger.

24. A method as claimed in claim 23 wherein the solids content of said dairy-based mass is increased prior to entering said second heat exchanger.

25. A method as claimed in claim 24 wherein the solids content of the cooked, dairy-based mass is increased after leaving said second heat exchanger.

26. A method as claimed in claim 25 wherein the solids content of the cooked, dairy-based mass is increased to at least about 90% by weight.

27. Apparatus for the continuous production of a dairy-based confection comprising:

- a) a heating vessel for dissolving sugars and forming an aqueous sugar composition,
- b) a first plate and frame heat exchanger for boiling said sugar composition, said first exchanger comprising an input for receiving said aqueous sugar composition, and an output for removal of boiling aqueous sugar composition,
- c) a mixing pipe for transporting said boiling aqueous sugar composition to a second plate and frame heat exchanger, said mixing pipe having a dairy component injection port for receiving a dairy component which is mixed with said boiling sugar composition in the mixing pipe to obtain a dairy-based mass,
- d) a second plate and frame heat exchanger for receiving said dairy-based mass and for heating said dairy-based mass to a desired cook temperature, and
- e) a vessel connected to the output of said second heat exchanger for receiving boiling dairy-based mass and for increasing the solids

content of the dairy-based mass to obtain a dairy-based confection.

28. Apparatus as claimed in claim 27 further comprising a flashing tank connected to said mixing pipe downstream of said injection port, said flashing tank receiving dairy-based mass and increasing the solids content of said dairy-based mass prior to entry into said second heat exchanger.

29. Apparatus as claimed in claim 27 wherein said vessel is open to the atmosphere.

30. Apparatus as claimed in claim 28 wherein said flashing tank is open to the atmosphere.

31. Apparatus as claimed in claim 28 wherein said vessel and said flashing tank are open to the atmosphere.

32. Apparatus as claimed in claim 27 wherein said vessel is under vacuum.

33. Apparatus as claimed in claim 27 further comprising a gelatin injection port in a conduit connecting said second heat exchanger and said vessel.

34. Apparatus as claimed in claim 27 further comprising a candy pulling machine for receiving said cooked, dairy-based mass and for pulling and cooling the dairy-based mass into a dairy-based confection.

35. Apparatus as claimed in claim 27 further comprising an extruder for receiving said cooked, dairy-based mass and for extruding and forming the dairy-based mass into a dairy-based confection.

36. Apparatus as claimed in claim 27 further comprising a mold for receiving said cooked, dairy-based mass and for molding the dairy-based mass into a dairy-based confection.